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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,644	11/24/2003	Akiyoshi Chosokabe	Q78560	1192

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EXAMINER	
YANG, ANDREW GUS	
ART UNIT	PAPER NUMBER
2628	

DATE MAILED: 10/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/718,644	CHOSOKABE, AKIYOSHI	
	Examiner	Art Unit	
	Andrew Yang	2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 17 August 2006.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-6 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-6 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 24 November 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwasaki (U.S. Patent No. 6,518,967) in view of Nagoshi et al. (U.S. Patent No. 6,234,901).

With respect to claim 1, Iwasaki discloses an image processing device for displaying an image representing an opaque object arranged in a virtual three-dimensional space (column 4, lines 66-67, column 5, lines 1-14). The game apparatus 20 in Fig. 1 of the present embodiment is constructed as a device capable of carrying out a game such as a race game (column 5, lines 27-29) and the present invention can also be applied to any moving object moving in the three-dimensional space and constructed of polygons (column 11, lines 40-43). In the present embodiment of the invention, Iwasaki displays a car object in Fig. 4. It is noted that Iwasaki does not explicitly teach the displayed object being opaque; OFFICIAL NOTICE is taken that it is well known to display opaque objects in a three-dimensional space. Therefore, it would have been obvious that the object displayed by Iwasaki be opaque because an opaque object would be clearly visible in a three-dimensional space. Iwasaki also discloses a highlight position calculation means for calculating a position in said virtual three-

dimensional space of an image representing a highlight caused by reflection of light from said light source appearing on a surface of said opaque object based on said viewpoint position (column 7, lines 10-21). The reflection texture image comprises an image of 256x256 dots that when a portion thereof is superimposed in the form of a translucent image on a polygon of the player car, that portion resembles reflecting light from light sources (street lights, etc.) present on the course (column 6, lines 39-43). However, Iwasaki does not expressly disclose light source position acquisition means for acquiring a light source position set in said three-dimensional pace; viewpoint position and viewing direction acquisition means for acquiring a view point position; highlight intensity calculation means for calculating intensity of the highlight based on said light source position and said viewing direction; semitransparent composition means for performing semitransparent composition of said image representing the highlight onto said image representing said opaque object based on the position in said virtual three-dimensional space calculated by the highlight position calculation means and a semitransparent composition rate corresponding to the intensity calculated by the highlight intensity calculation means; and image display means for displaying an image obtained by performing semitransparent composition of said image representing the highlight onto said image representing said opaque object by said semitransparent composition means.

Nagoshi et al., who also deals with displaying light effects for a three-dimensional environment, disclose a main CPU 101 in Fig. 1 for executing application software at a high speed (column 5, lines 34-37), thus providing a means for performing the following

steps. The main CPU provides a light source position acquisition means by determining the position relationship the light source is located within a camera view (column 7, lines 55-56). In Fig. 3, the letter "A" indicates a unit vector on a line linking a camera position and the light source (column 7, lines 37-38); so, a viewpoint position acquisition means acquires the camera or viewpoint position as designated by 21. The CPU also provides a viewpoint direction acquisition means by determining to what extent the camera is facing in the direction of the light source (column 7, lines 54-55). Referring to Fig. 3, the unit vectors A and B, dependent on the light source position and viewing direction, form an angle theta (column 7, lines 40-41), and are used to calculate an inner product C (column 7, lines 65-66). As the value C of the inner product is larger, it means that a ray comes straight from the light source and enters the camera lens, thereby stronger flares (highlights) are generated (column 8, lines 24-28). Therefore a highlight intensity calculation means calculates intensity of the highlight based on the light source position and viewing direction. A transparency D in proportion to the value C is found (S114) in Fig. 2 (column 8, lines 32-33). If the transparency D is semitransparent, half of the luminance of a ground picture is added to half of the luminance of the flare polygons, and the results of addition are drawn on the frame buffer, thereby obtaining a flare picture (S118) in Fig. 2 (column 8, lines 38-42). Because the position of the flare polygons is needed to perform the semitransparent composition with the ground picture, a semitransparent composition means performs the semitransparent composition based on the flare or highlight position. A semitransparent composition rate corresponds to the transparency D, proportional to inner product C, as calculated from vectors A and B, in

which vector A corresponds to an incident light having a direction and size (or strength of light) (column 8, lines 7-8), thereby corresponding to the intensity calculated by the highlight intensity calculation means. In Fig. 1, a TV picture receiver 5 (or projector) provides an image display means for displaying the flare picture obtained from the semitransparent composition means.

Iwasaki and Nagoshi et al. are analogous in that they are in the same field of endeavor, namely displaying light effects for a three-dimensional environment.

At the time of the invention, it would have been obvious to one skilled in the art to combine the light source position acquisition, viewpoint position, viewing direction, highlight intensity, and semitransparent composition means as taught by Nagoshi et al. in the Iwasaki reference because this would allow for generating light effects on an opaque object that are affected by light source position, viewpoint position, viewing position, and highlight intensity to generate a more realistic image.

With respect to claim 2 and 3, Iwasaki discloses the system of claim 1. However, Iwasaki does not expressly disclose calculating the position of the highlight based on the viewpoint position, viewpoint direction, and light source position.

Nagoshi et al., who also deals with displaying light effects in a three-dimensional environment, discloses a system wherein a line linking the camera position with the light source object is converted into a line E on a two-dimensional screen and a route of the ray in a screen picture is specified (S116) in Fig. 2. Flare polygons having the transparency D are drawn at appropriate positions along the line E (column 8, lines 34-38). This flare polygon positions are based on the viewpoint position, viewpoint

direction, and light source position because line E is formed by the camera position and direction with respect to the light source position.

Iwasaki and Nagoshi et al. are analogous in that they are in the same field of endeavor, namely displaying light effects in a three-dimensional environment.

At the time of the invention, it would have been obvious to one skilled in the art to combine the teaching of calculating the position of the highlight based on said viewpoint position, said viewing direction and said viewpoint position and light source position as taught by Nagoshi et al. with the Iwasaki reference because this would calculate the position of a highlight dependent on the viewpoint position, viewpoint direction, and light source position, thus generating a more realistic lighting effect as opposed to a view-independent and light-independent method.

With respect to claim 4, Iwasaki discloses the system of any of claims 1-3. However, Iwasaki does not expressly disclose calculating the intensity of the highlight based on said viewing direction and the direction connecting two of said light source position, said viewpoint position, and said highlight position.

Nagoshi et al., who also deals with displaying lighting effects, disclose a system, wherein the unit vectors A and B in Fig. 3, dependent on the light source position and viewing direction, form an angle theta (column 7, lines 40-41), and are used to calculate an inner product C (column 7, lines 65-66). As the value C of the inner product is larger, it means that a ray comes straight from the light source and enters the camera lens, thereby stronger flares (highlights) are generated (column 8, lines 24-28) as calculated by the highlight intensity calculation means. This calculation is based on the viewing

direction and the direction connecting two of said light source position, said viewpoint position, and said highlight position because the unit vectors A and B used in the calculation are dependent on the viewing direction, light source position, and viewpoint position as shown in Fig. 3.

Iwasaki and Nagoshi et al. are analogous in that they are in the same field of endeavor, namely displaying light effects in a three-dimensional environment.

At the time of the invention, it would have been obvious to one skilled in the art to combine the teaching of calculating the intensity of the highlight based on said viewing direction and the direction connecting two of said light source position, said viewpoint position, and said highlight position as taught by Nagoshi et al. with the Iwasaki reference because this would calculate the intensity of a highlight dependent on the light source position, said viewpoint position, and said highlight position, thus generating a more realistic lighting effect as opposed to a view-independent and light-independent method.

With respect to claim 5, Iwasaki discloses a method executed by the system of claim 1 (see rationale for rejection of claim 1).

With respect to claim 6, Iwasaki discloses an information storage medium for storing a program for cause a computer to function (column 4, lines 36-39) for implementing the method executed by the system of claim 1 (see rationale for rejection of claim 1).

Response to Arguments

Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Yang whose telephone number is (571) 272-5514. The examiner can normally be reached on 8:30-5 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Zimmerman can be reached on (571) 272-7653. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AGY

10/27/06

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